REMARKS

Summary of the Office Action

In the non-final Office Action mailed on March 10, 2009, the Examiner objected to the specification for failing to provide proper antecedent basis for a "computer readable medium" and "electromagnetic medium" as claimed.

The Examiner rejected claim 49 under 35 U.S.C. § 101 because it allegedly fails to establish a statutory category of invention.

The Examiner rejected claims 1-56 on the grounds of nonstatutory double patenting over:

claims 1-62 ("the '701 claims") of U.S. Patent No. 7,020,701 ("the '701 Patent"),

claims 1-55 ("the '831 claims") of U.S. Patent No. 6,859,831 ("the '831 Patent"),

claims 1-68 ("the '607 claims") of U.S. Patent No. 6,826,607 ("the '607 Patent"),

claims 1-4, 9-14, 16, 18, 20-24, 27-38, 40, 41, 43, and 45-55 ("the '387 claims"), of U.S. Patent App. No. 09/684,387 ("the '387 Application"), and

claims 1-32, 34-63, 65-81, 91, 92, 94, 95, 97, 99-101, 103, 106, and 108-119 ("the '706 claims") of U.S. Patent App. No. 09/684,706 ("the '706 Application").

The Examiner rejected claims 1-6, 8, 14-24, 30, 34, 39-45, 48, 49 and 52-56 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,414,955 ("Clare") in view of Wesson et al., "Network Structures for Distributed Situation Assessment", IEEE Transactions on Systems, Man, and Cybernetics, Vol. 11, No. 1, pp. 5-23 ("Wesson").

The Examiner rejected claims 7, 9-13, 33, 35, and 36 under 35 U.S.C. § 103(a) as being unpatentable over Clare-Wesson in view of U.S. Patent No. 6,546,419 ("Humpleman").

The Examiner rejected claims 25-29, 31, 32, 46, 47, 50, and 51 under U.S.C. § 103(a) as being unpatentable over Clare-Wesson in view of U.S. Patent No. 6,615,088 ("Myer").

The Examiner rejected claim 37 under 35 U.S.C. § 103(a) as being unpatentable over Clare-Wesson in view of U.S. Patent No. 5,742,829 ("Davis").

The Examiner rejected claim 38 under 35 U.S.C. § 103(a) as being unpatentable over Clare-Wesson in view of U.S. Patent Pub. No. 2002/0154631 ("Makansi").

Status of the Claims

Applicants have canceled claim 49. Applicants have amended claim 1 and Applicants have amended claim 56 to correct a typographical error. Currently pending are claims 1-48 and 50-56, of which claims 1, 46, 48, 50, 51, 54, and 56 are independent and the remainder are dependent.

Response to Objections to the Specification

As mentioned above, the Examiner objected to the specification as failing to provide proper antecedent basis for a "computer readable medium." (Office Action, page 2).

The Examiner suggested amending the specification to include the term "computer readable medium." Applicants have amended the specification to include the term "computer readable medium." As the Examiner stated, this amendment does not constitute new matter since the originally filed claims properly claim this term. (See Office Action, page 21).

Further, the Examiner objected to the specification as failing to provide proper antecedent basis for "electromagnetic medium." (Office Action, page 2). Applicants have canceled claim 49. Therefore, the objection to the specification based on this term is moot.

Accordingly, Applicants respectfully request withdrawal of the objection to the specification.

Response to Claim Rejections

1. Claim 1 is patentable over Clare in view of Wesson as the cited art does not disclose (i) "organizing the plurality of nodes into a plurality of clusters", (ii) "wherein the assembly packet includes a cluster indication", or (iii) "modifying the cluster indication in the assembly packet", as recited in claim 1.

In claim 1, Applicants recite a method for operating a sensor network comprising a plurality of nodes. The method includes "organizing the plurality of nodes into a plurality of clusters". As required by claim 1, organizing the plurality of nodes into a plurality of clusters is accomplished by "receiving an assembly packet from a start node at at least one node neighboring the start node, wherein the assembly packet includes a cluster indication, and upon reception of the assembly packet at the at least one node, determining a cluster for the node based on the cluster indication in the assembly packet, modifying the cluster indication in the assembly packet, and transmitting the assembly packet with the modified cluster indication to each node neighboring the node". Organizing the nodes into a plurality of clusters allows for transferring data collected from at least one sensor node to a node in a cluster other than the cluster comprising the at least one sensor node, as required by claim 1.

In contrast, Clare discloses communicating among a plurality of nodes that are not organized into a plurality of clusters. In response to Applicants' argument in the response to the Office Action Mailed August 11, 2008 that Clare does not disclose organization of a plurality of network elements by flooding an assembly packet, the Examiner stated that "Applicant's attention is directed to cols. 8-10 of Clare which clearly discloses the assembly of nodal clusters via assembly packets." (Office Action, pages 21-22). Applicants have

reviewed these three columns cited by the Examiner and respectfully disagree with the Examiner's characterization of the teachings of Clare. In fact, Clare does not disclose the assembly of clusters, much less disclose assembly of clusters via assembly packets that includes a cluster indication.

Columns 8-10 describe, in general, adding a node to a startup network, which is an existing communicating network of nodes organized to allow communication (by multi-hop relay if necessary) between any two members of the network. (Clare, column 8, lines 7-12). Given the startup network, Clare provides a way to add one or more nodes to the network and to learn the resulting topology so that communications may be scheduled for the resulting larger network. (Clare, column 8, lines 23-27). However, Clare is not directed toward organizing these nodes into clusters. In fact, Clare does not mention the word cluster or hint at the organization of nodes into a plurality of different groups. Rather, Clare discusses determining a "potential interference range" and a "potential communication range" to facilitate sending out a new communication schedule when a new node enters the network of nodes. Clare does not discuss breaking up or organizing these individual nodes into clusters.

As discussed in the Response to the Office Mailed August 11, 2008, Clare discloses that the all of the nodes of the network, particularly the nodes of the startup network, (quasi-) periodically send out invitations to join the network. (Clare, column 8, lines 28-39). Non-member nodes (or "new nodes") are pre-programmed to occasionally listen for some number of periods for invitations. When a new node receives an invitation from a member node, the new node responds indicating the new node and the member node are neighbors. (Clare, column 8, line 49-52. Clare discloses that the network is scheduled so that no conflicts occur between communications. (Clare, column 8, line 56 – column 9, line 1 and column 9, lines 24-41).

The network determines a "potential interference range" for the new node based on the location of the member node communicating with the new node, the maximum communication range g, and the maximum interference range b. (Clare, column 9, lines 1-23). The new node then determines a possible location or "potential communication range" of the new node based on both the maximum communication range g of the new node and the locations of member node that can communicate with the new node. (Clare, column 9, line 42 – column 10, line 15). Then, based on the potential interference range and the potential communication range of the new node, the initial invitation is transmitted to the new node in a non-interfering time slot and the relative locations of the new node and the member node are determined. (Clare, column 10, lines 16-51). In summary, Clare discloses organization of a network of nodes that are capable of communicating with one another

without interfering with one another. However, Clare does not disclose "organizing the plurality nodes into a plurality of clusters", as required by claim 1.

Further, in addition to not disclosing organizing the plurality of nodes into a plurality of clusters, Clare does not disclose an assembly packet "wherein the assembly packet includes a cluster indication", as required by claim 1. Rather, Clare discloses a packet that has communication schedule information. The Examiner equates an assembly packet including a cluster indication with a packet that has communication schedule information. Specifically, the Examiner stated that Clare discloses an assembly packet that includes a "cluster indication (i.e., communication schedule)". (Office Action, page 6). However, a communication schedule is not a cluster indication. As discussed about, Clare does not break the nodes into clusters, and the communication schedule does not contain a cluster indication. Additionally, a communication schedule is not a cluster indication in and of itself.

Still further, Clare does not disclose "modifying the cluster indication in the assembly packet, and transmitting the assembly packet with the modified cluster indication to each node neighboring the node", as required by claim 1. The Examiner cites to column 15, lines 25-43 for the disclosure of upon reception of the assembly packet at a node, determining a cluster for the node based on the cluster indication in the assembly packet, modifying the cluster indication in the assembly packet, and transmitting the assembly packet with the modified cluster indication to each node neighboring the node. (Office Action, page 6). In the rejection, the Examiner stated "i.e., communication schedule is distributed to all packets in the network, indicating the presence of the new node." However, neither this cited section nor any other section of Clare discloses modifying the cluster indication in the assembly packet, as required by claim 1.

While Applicants agree that Clare discloses that communication schedule is distributed to packets in the network, indicating the presence of the new node, Applicants respectfully disagree that this teaching is the same as "modifying the cluster indication." First, Clare does not disclose modifying the cluster indication because, as discussed above, Clare does not disclose an assembly packet that includes a cluster indication. It is impossible to modify a cluster indication that does not exist to begin with. Second, the communication schedule that is passed between the nodes in Clare is not modified. Rather, each node receives the same communication schedule. (Clare, column 15, lines 33-35). Therefore, Clare does not disclose modifying the cluster indication, as required by claim 1.

The Examiner cites to Wesson for the teaching of distributing storage and processing of the collected data among the plurality of clusters. The Examiner stated that it would have been obvious to one of ordinary skill in the art to combine the teaching of Clare with Wesson in order to provide an improved method for distributed situation assessment among the nodes of Clare, thereby enabling the sensors to communicate data with one another.

However, as described above, Clare fails to disclose organizing the plurality of nodes into a plurality of clusters. The teachings of Wesson fail to overcome this deficiency of Clare.

Because neither Clare nor Wesson show or suggest "organizing the plurality of nodes into a plurality of clusters", Applicants believe that the combination of Clare and Wesson fail to show or suggest all of the elements of claim 1. Further, because neither Clare nor Wesson show or suggest an assembly packet "wherein the assembly packet includes a cluster indication" or "modifying the cluster indication", Applicants believe that the combination of Clare and Wesson fail to show or suggest all of the elements of claim 1. Accordingly, Applicants submit that claim 1 is not obvious in light of Clare and Wesson.

Therefore, Applicants respectfully request withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a).

2. Claims 46, 48, 50, 51, 54, and 56 each are patentable over Clare-Wesson (or Clare-Wesson in view of Meyer) as the cited art does not disclose "organizing a plurality of network elements including a start node and at least one sensor node into a plurality of clusters by flooding an assembly packet from the start node to each network element in the plurality of network elements."

Claim 46 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Clare-Wesson in view of Myer. Claim 46 recites, *inter alia,* "organizing a plurality of network elements including a start node and at least one sensor node into a plurality of clusters by flooding an assembly packet from the start node to each network element in the plurality of network elements."

As described above for claim 1, neither Clare nor Wesson disclose or suggest use of assembly packets or flooding assembly packets from a start node to each network element, to organize a plurality of network elements into a plurality of clusters, as recited in claim 46.

Myer discloses a system and method for device driver configuration. (Myer, column 1, lines 8-10). Myer describes a control network portal coupled between the Internet and one or more control area networks. (Myer, column 2, lines 42-54). The control area networks may include master controllers that are used to install and configure components in a control system. (Myer, column 2, lines 60-63 and column 5, lines 26-45). The control area networks may use network connectivity that is "wired, wireless, power line carriers, or any suitable transmission medium." (Myer, column 2, lines 59-60). When a new device connects to the control area network, the new device informs the master controller of the manufacturer name and device type. (Myer, column 6, lines 1-7). The master controller may retrieve a configuration file for the new device and then graphically display the configuration file for user control. (Myer, column 6, lines 12-49).

However, Myer does not cure the deficiencies of Clare and Wesson. Specifically, Myer fails to disclose or suggest "organizing a plurality of network elements including a start node and at least one sensor node into a plurality of clusters by flooding an assembly packet from the start node to each network element in the plurality of network elements". Applicants therefore submit that claim 46 is allowable over Myer. Applicants therefore submit that claim 46 is allowable over the cited art and thus respectfully request the Examiner withdraw the rejection of claim 46 under 35 U.S.C. § 103(a).

Each of claims 48, 50, 51, 54, and 56 also include elements not disclosed in the prior art. (See, e.g., "organizing a plurality of network elements including a start node and at least one sensor node into a plurality of clusters by flooding an assembly packet from the start node to each network element in the plurality of network elements", "organizing a plurality of network elements including a start node and at least one sensor node into a plurality of clusters by flooding an assembly packet from the start node to each network element in the plurality of network elements", "organizing a plurality of network elements including a start node, one or more sensor nodes, and at least one user computer with at least one Internet coupling into a plurality of clusters by flooding an assembly packet from the start node to each network element in the plurality of network elements", "organizing a plurality of nodes, comprising a start node and one or more sensor nodes, into a plurality of clusters by flooding at least one packet transmitted from the start node to each other node in the plurality of nodes", and "organizing a plurality of network elements into a plurality of clusters by flooding an assembly packet from a start node in the plurality of network element to each other network element in the plurality of network elements", respectively claims 48, 50, 51, 54, and 56). Also, each of claims 48, 50, 51, 54, and 56 were rejected by the Examiner relying on either the Clare-Wesson or Clare-Wesson-Myer combination. Applicants therefore submit that the each of claims 48, 50, 51, 54, and 56 is allowable over the cited art, for at least the reasons presented for claims 1 and 46, and thus respectfully requests the Examiner withdraw the rejections of claims 48, 50, 51, 54, and 56 under 35 U.S.C. § 103(a).

Further, Applicants submit that each of the dependent claims is allowable for at least the reason that each dependent claim depends from an allowable base claim. Applicants therefore request the Examiner withdraw the rejections of each of the dependent claims under 35 U.S.C. § 103(a).

3.   Response to the double patenting rejections made by the Examiner

In response to the Examiner's rejections, Applicants have submitted herewith Terminal Disclaimers to Obviate the Double Patenting Rejections over prior U.S. Patent Nos. 7,020,701, 6,859,831, and 6,826,607. Applicants submit that they have traversed all of the

double patenting rejections and that the provisional double patenting rejections based on U.S. Patent Application Nos. 09/684,387 and 09/684,706 should be withdrawn.

Conclusion

In view of the foregoing, Applicant submits that all pending claims are allowable, and thus Applicant respectfully requests allowance of these claims. Should the Examiner wish to discuss this case, the Examiner is invited to call the undersigned at (312) 913-3350.

Respectfully submitted,

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Dated: June 10, 2009   By: /Scott M. Miller/_____ _____
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